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PATENT

Attorney Reference Number 4239-61854
Application Number 10/031,158

Claims

This listing of claims will replace all prior listings of claims:

Claim 1 (currently amended): ~~An isolated~~ A substantially purified polypeptide ~~comprising an amino acid sequence~~ comprising:

~~selected from the group consisting of a TCRγ Alternate Reading frame Protein ("TARP"),~~ (a) an amino acid sequence set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution;

(b) an immunogenic fragment ~~thereof~~ of the protein comprising the amino acid sequence set forth as SEQ ID NO: 14, or variant thereof having a conservative substitution;[,]

(c) a polypeptide with at least 90% sequence identity to ~~TARP~~ the amino acid sequence set forth as SEQ ID NO: 14 ~~and which~~ that is specifically recognized by an antibody ~~which~~ that specifically recognizes ~~TARP~~ the protein comprising the amino acid sequence set forth as SEQ ID NO: 14;~~, and~~ or

(d) a polypeptide ~~which~~ that has at least 90% sequence identity with ~~TARP~~ the amino acid set forth as SEQ ID NO: 14 and ~~which~~ that, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells ~~which~~ that express ~~TARP~~ the protein encoded by the amino acid sequence set forth as SEQ ID NO: 14.

Claim 2 (currently amended): ~~An isolated~~ The substantially purified polypeptide of claim 1, wherein the polypeptide comprises ~~the sequence of TARP~~ the amino acid sequence set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution.

Claim 3 (currently amended): ~~An isolated~~ The substantially purified polypeptide of claim 1, wherein the ~~polypetide~~ polypeptide comprises ~~the sequence of~~ an immunogenic fragment of ~~TARP~~ the amino acid sequence as set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution.

Claim 4 (currently amended): ~~An isolated~~ The substantially purified polypeptide of claim 1, ~~which~~ wherein the ~~polypetide~~ polypeptide has at least 90% sequence identity to ~~TARP~~ an amino acid

sequence as set forth as SEQ ID NO: 14 and is specifically recognized by an antibody ~~which~~ that specifically recognizes ~~TARP~~ the amino acid sequence as set forth as SEQ ID NO: 14.

Claim 5 (currently amended): ~~An isolated~~ The substantially purified polypeptide of claim 1, ~~which~~ wherein the polypeptide has at least 90% sequence identity ~~with TARP~~ to the amino acid sequence as set forth as SEQ ID NO: 14 and ~~which~~ that, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells ~~which~~ that express ~~TARP~~ the protein encoded by the amino acid sequence as set forth as SEQ ID NO: 14.

Claim 6 (currently amended): A composition comprising a polypeptide of claim [2] 1 and a pharmaceutically acceptable carrier.

Claims 7-9 (canceled herein).

Claim 10 (currently amended): ~~An isolated,~~ A substantially purified recombinant nucleic acid molecule ~~comprising a nucleotide sequence encoding a polypeptide having the amino acid sequence of a TCRγ Alternate Reading frame Protein ("TARP"), an immunogenic fragment thereof, a polypeptide with at least 90% sequence identity to TARP and which is specifically recognized by an antibody which specifically recognizes TARP, and a polypeptide which has at least 90% sequence identity with TARP and which, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells which express TARP~~ encoding the polypeptide of claim 1.

Claims 11-14 (canceled herein).

Claim 15 (currently amended): The ~~isolated,~~ substantially purified recombinant nucleic acid molecule of claim 10 ~~which is an expression vector comprising a promoter, operatively~~ operably linked to a promoter ~~the nucleotide sequence~~.

Claim 16 (currently amended): The ~~isolated,~~ substantially purified recombinant nucleic acid molecule of claim 15, wherein ~~said~~ the nucleotide sequence encodes a polypeptide ~~having~~

comprising the amino acid sequence ~~of a TCRγ Alternate Reading frame Protein ("TARP")~~ as set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution.

Claim 17 (currently amended): The ~~isolated,~~ substantially purified recombinant nucleic acid molecule of claim 15, wherein ~~said~~ the nucleotide sequence encodes a polypeptide ~~having~~ comprising the amino acid sequence of an immunogenic fragment of ~~TARP~~ the protein comprising the amino acid sequence as set forth as SEQ ID NO: 14, or variant thereof having a conservative substitution.

Claim 18 (currently amended): The ~~isolated,~~ substantially purified recombinant nucleic acid molecule of claim 12, wherein ~~said~~ the nucleotide sequence encodes a polypeptide with at least 90% sequence identity to ~~TARP~~ an amino acid sequence as set forth as SEQ ID NO: 14 and ~~which~~ that is specifically recognized by an antibody ~~which~~ that specifically recognizes ~~TARP~~ a protein comprising the amino acid sequence as set forth as SEQ ID NO: 14.

Claim 19 (currently amended): The ~~isolated,~~ substantially purified recombinant nucleic acid of claim 12, wherein ~~said~~ the nucleotide sequence encodes a polypeptide ~~which~~ that has at least 90% sequence identity ~~with TARP~~ to the amino acid sequence as set forth as SEQ ID NO: 14 and ~~which~~ that, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells ~~which~~ that express ~~TARP~~ the amino acid sequence as set forth as SEQ ID NO: 14.

Claim 20 (currently amended): A method for eliciting an immune response in a subject, comprising administering to a subject a composition ~~which composition is selected from the group consisting of: an isolated polypeptide having the amino acid sequence of a TCRγ Alternate Reading frame Protein ("TARP"), an immunogenic fragment thereof, a polypeptide with at least 90% sequence identity to TARP and which is specifically recognized by an antibody which specifically recognizes TARP, a polypeptide which has at least 90% sequence identity with TARP and which, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells which express TARP~~, comprising:

(a) the polypeptide of claim 1;

(b) ~~an isolated~~ a substantially purified nucleic acid encoding ~~one of these polypeptides~~ the polypeptide of claim 1 in an expression vector;

(c)[,] an antigen presenting cell pulsed with a polypeptide comprising an epitope of ~~TARP,~~ the polypeptide of claim 1 ~~and cells sensitized in vitro to TARP~~, or an immunogenic fragment thereof, ~~a polypeptide with at least 90% sequence identity to TARP which is specifically recognized by an antibody which specifically recognizes TARP, or a polypeptide which has at least 90% sequence identity with TARP which, when processed and presented in the context of Major Histocompatibility Complex molecules, activates T lymphocytes against cells which express TARP~~ thereby eliciting an immune response in the subject.

Claims 21-23 (canceled herein).

Claim 24 (currently amended) The method of claim 20 wherein the ~~administration to a~~ subject ~~who suffers from~~ has prostate cancer.

Claim 25 (currently amended): The method of claim 20, wherein the ~~administration is to a~~ subject ~~who suffers from~~ has breast cancer.

Claim 26 (currently amended): The method of claim 20, wherein the ~~administration is to a female~~ subject ~~who has not been diagnosed with~~ is a female at risk for developing breast cancer.

Claim 27 (currently amended) The method of claim 20 wherein the ~~administration~~ administered composition further comprises ~~sensitizing~~ CD8+ cells ~~*in vitro* to an epitope of a TARP protein and administering the sensitized cells to the subject~~ that are sensitized with antigen presenting cells pulsed with a polypeptide comprising an epitope of the protein having an amino acid sequence as set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution.

Claim 28 (currently amended): The method of claim 20, further comprising co-administering to the subject an immune adjuvant ~~selected from~~ comprising a non-specific immune ~~adjuvants~~ adjuvant, a subcellular microbial ~~products~~ product and ~~fractions~~ fraction, a ~~haptens~~ hapten, an

immunogenic ~~proteins~~ protein, an ~~immunomodulators~~ immunomodulator, an ~~interferons~~ interferon, a thymic ~~hormones~~ hormone ~~and~~, or a colony stimulating ~~factors~~ factor.

Claim 29 (currently amended): The method of claim 20, comprising administering an antigen presenting cell pulsed with a polypeptide comprising an epitope of ~~TARP~~ the protein having an amino acid sequence as set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution.

Claim 30 (currently amended): The method of claim 20 ~~comprising administering a~~, wherein the substantially purified nucleic acid ~~sequence encoding polypeptide comprising an epitope of TARP, which nucleic acid~~ is in a recombinant virus.

Claim 31 (currently amended): The method of claim 20 ~~comprising administering a~~ wherein the nucleic acid has a sequence as set forth as SEQ ID NO: 13 or a degenerate version thereof. ~~encoding a polypeptide comprising an epitope of a TARP protein.~~

Claim 32 (currently amended): ~~The~~ A method of ~~claim 20~~ eliciting an immune response, comprising administering ~~an expression vector that expresses a polypeptide~~ to a subject a composition, comprising ~~an epitope of a TARP protein, which expression vector is in~~ a recombinant bacterial cell comprising the nucleic acid molecule of claim 15.

Claim 33 (currently amended): ~~The~~ A method of ~~claim 20~~ eliciting an immune response, comprising administering to a subject a composition, comprising ~~immunizing the subject with a expression vector that expresses a polypeptide comprising an epitope of a TARP protein, which expression vector is in~~ an autologous recombinant cell comprising the nucleic acid molecule of claim 15.

Claim 34 (currently amended): The method of claim 27 wherein the CD8+ cells are ~~T_C cells~~ cytotoxic T lymphocytess.

Claim 35 (currently amended): The method of claim 34 wherein the ~~T_C cells~~ cytotoxic T lymphocytes are tumor infiltrating lymphocytes.

Claim 36 (currently amended): A method for detecting~~, in a male, a prostate cell of epithelial origin, or, in a female,~~ a ~~breast~~ cancer in a subject ~~cell~~, comprising detecting in a ~~cell~~ sample from ~~said male or said female~~ the subject the hybridization of a probe specific for a nucleic acid ~~transcript encoding TARP, or detecting TARP produced by translation of the transcript~~ that encodes the polypeptide of claim 1, whereby ~~detection of the transcript or of the protein in a cell from said male identifies the cell as a prostate epithelial cell and whereby detection of the transcript or of the protein in a cell from said female identifies the cell as a breast~~ the hybridization of the probe to the nucleic acid indicates that the subject has cancer ~~cell~~.

Claim 37 (original): The method of claim 36, comprising detecting the transcript.

Claim 38 (original): The method of claim 36, comprising detecting the protein.

Claim 39 (original): The method of claim 36, comprising contacting RNA from the cell with a nucleic acid probe that specifically hybridizes to the transcript under hybridization conditions, and detecting hybridization.

Claim 40 (currently amended): The method of claim 36, comprising disrupting ~~said~~ the cell and contacting a portion of the cell contents with a chimeric molecule comprising a targeting moiety and a detectable label, wherein the targeting moiety specifically binds to the protein, and detecting the label bound to the protein.

Claim 41 (currently amended): The method of claim 36, wherein the ~~cell is taken from~~ hybridization is detected in a sample comprising a lymph node cell of the subject.

Claim 42 (currently amended): The method of claim 36, wherein the ~~cell is taken from~~ hybridization is detected in a sample comprising a breast biopsy cell of the subject.

Claim 43 (currently amended) An antibody that specifically binds to ~~an epitope of a TCRγ Alternate Reading frame Protein~~ the polypeptide of claim 1.

Claim 44 (currently amended): A method of modulating levels of ~~TARP~~ a protein comprising the amino acid sequence as set forth as SEQ ID NO: 14 in a cell, ~~said~~ comprising introducing into ~~said~~ the cell a composition ~~selected from the group consisting of~~ comprising: a ribozyme ~~which~~ that specifically cleaves a ~~TARP-encoding~~ nucleic acid of claim 10, an antisense oligonucleotide ~~which~~ that specifically binds to a ~~TARP encoding~~ nucleic acid of claim 10, a DNA binding protein ~~which~~ that binds specifically to a ~~TARP encoding~~ nucleic acid of claim 10, ~~and~~ or a nucleic acid of claim 10, ~~encoding TARP~~ operatively linked to a promoter.

Claim 45 (new): The substantially purified polypeptide of claim 1, wherein the polypeptide comprises the amino acid sequence set forth as SEQ ID NO: 14.

Claim 46 (new): The nucleic acid of claim 10, comprising the nucleic acid sequence as set forth as SEQ ID NO: 13.

Claim 47 (new): A vector comprising the nucleic acid of claim 15.

Claim 48 (new): The method of claim 36, comprising detecting the hybridization in a prostate epithelial cell of a male.

Claim 49 (new): The method of claim 36, comprising detecting the hybridization in a breast cell of a female.

Claim 50 (new): A method of detecting cancer in a subject, comprising detecting the contacting of an antibody that specifically binds a protein having the amino acid sequence as set forth as SEQ ID NO: 14, or a variant thereof having a conservative substitution in a sample from the subject, whereby detection of the binding indicates that the subject has cancer.

Claim 51 (new): The method of claim 36, wherein the subject is a male and the cell is a prostate epithelial cell.

Claim 52 (new): The method of claim 36, wherein the subject is a female and the cell is a breast cell.

Claim 53 (new): The method of claim 51, wherein the sample comprises a lymph node cell.

Claim 54 (new): The method of claim 51, wherein the sample comprises a breast biopsy cell.